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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,707	03/29/2004	Takashi Shiraishi	036741-0131	9057
22428	7590	04/05/2006	EXAMINER	
FOLEY AND LARDNER LLP			KHATRI, PRANAV V	
SUITE 500			ART UNIT	
3000 K STREET NW			PAPER NUMBER	
WASHINGTON, DC 20007			2872	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/810,707

Applicant(s)

SHIRAISHI, TAKASHI

Examiner

Pranav V. Khatri

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 12 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 14, 18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) 6-13 and 15-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 14, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) 6-13, 15-17 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Drawings

The corrected drawings submitted on January 12, 2006 are accepted and acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 14, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omura (US Patent 6,229,656) in view of Kanazawa (US Patent No. 6,194,713).

Regarding claim 1, Omura discloses an optical multi-beam scanning device (see Omura Fig 3), comprising: a plurality of light sources (101A-101D); deflecting means (5) for deflecting light beams from the light sources; post-deflection optical means (30) for making the light beams deflected by the deflecting means enter a surface to be scanned in a vertical scanning direction with respect to a normal direction of the surface to be scanned at a predetermined angle; horizontal synchronization detecting means (23) for synchronizing the light beams in a horizontal scanning direction. Omura does not explicitly teach a light receiving surface of the horizontal synchronization detecting means is tilted in the vertical scanning direction so as to output a

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horizontal synchronized signal when the light beams come to the same position on the surface to be scanned in the horizontal scanning direction.

However, Kanazawa discloses a light receiving surface of the horizontal synchronization detecting means (see Ishihara figure 2, 3, 5 and 6 numeral 50) is tilted in the vertical scanning direction (the detector 50 is tilted in the vertical scanning direction by rotating around the horizontal direction; when rotating about the axis of the cylindrical support the detector tilts up and down in the vertical direction; Abstract, Col 7 lines 34-41, Col 2 lines 24-25) so as to output a horizontal synchronized signal when the light beams come to the same position on the surface to be scanned in the horizontal scanning direction (as seen in figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Omura to have a detector be *tilted in the* vertical direction such as Kanazawa for the purpose of providing a compensating means to the light beams deflected by the deflector on a specific target of the detector. Furthermore, there is a possibility that the rotation axis of the polygon mirror is inclined due to manufacturing error, which would cause an error in the start of the scan. Therefore, the start timing of the scan is not affected by the manufacturing error in the polygon mirror. In addition, the tilting of the synchronization device is tilted because when a beam is off center the tilt of the detector compensates so a full intensity beam is provided to the detector or other wise a weak intensity beam will provide inaccurate timing for the start scan position.

Regarding claim 2, Omura in view of Kanazawa discloses wherein the light receiving surface of the horizontal synchronization (50) detecting means is tilted in the vertical scanning direction at an angle equivalent to that of the surface to be scanned (Kanazawa, the detector 50 is tilted in the vertical scanning direction by rotating around the horizontal direction; when rotating about the axis of the cylindrical support the detector tilts up and down in the vertical direction; Abstract, Col 7 lines 34-41, Col 2 lines 24-25).

Regarding claim 3, Omura in view of Kanazawa discloses wherein when a tilting direction of the light receiving surface of the horizontal synchronization (50) detecting means is assumed to be in a plane formed in the vertical scanning direction and the horizontal scanning direction, and the tilting angle is a direction such that the horizontal synchronized signal is output when the light beams are on the same position on the surface to be scanned in the horizontal scanning direction (Kanazawa, the detector 50 is tilted in the vertical scanning direction by rotating around the horizontal direction; when rotating about the axis of the cylindrical support the detector tilts up and down in the vertical direction; Abstract, Col 7 lines 34-41, Col 2 lines 24-25).

Regarding claim 4, Omura in view of Kanazawa discloses wherein a tilting angle of the light receiving surface of the horizontal synchronization detecting means includes the horizontal scanning direction, the vertical scanning direction, and a direction perpendicular to the horizontal scanning direction and the vertical scanning direction (Kanazawa, the detector 50 is tilted in the vertical scanning direction by rotating around the horizontal direction; when rotating about the axis

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of the cylindrical support the detector tilts up and down in the vertical direction and a direction perpendicular; Abstract, Col 7 lines 34-41, Col 2 lines 24-25)

Regarding claim 5, Omura in view of Kanazawa discloses wherein a relationship among wavelengths of the light beams from the light sources (see Omura 101A-101D) is set so that their moving amounts in the horizontal scanning direction with respect to a deflecting angle are uniform (Col 6 Lines 15-21 and Lines 40-44), an optical element (25) for changing an emitting angle according to a fluctuation in the wavelengths of the light beams emitted from the light sources is arranged on an optical path between the deflecting means (5) and the horizontal synchronization detecting means (23).

Regarding claim 14, Omura in view of Kanazawa discloses a photoreceptor (58) having a surface to be scanned on which latent images are formed based on light beams from the optical multi-beam scanning device (Col 3 Lines 31-36 and Lines 48-52).

Regarding claim 18, Omura in view of Kanazawa discloses an optical path folding means (Omura figure3, 25) for folding the light beams, directing towards the surface to be scanned (58), to the horizontal synchronization detecting means (23).

Regarding claim 19, Omura discloses an optical multi-beam scanning device (see Omura Fig 3), comprising: a plurality of light sources (101A-101D); deflecting device (5) configured to deflect light beams from the light sources; a post-deflection optical configured to make the light beams deflected by the deflecting device enter a surface to be scanned in a vertical scanning direction

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with respect to a normal direction of the surface to be scanned at a predetermined angle; and a horizontal synchronization sensor (23) configured to synchronize the light beams in a horizontal scanning direction. Omura does not explicitly teach wherein a light receiving surface of the horizontal synchronization sensor is tilted in the vertical scanning direction so as to output a horizontal synchronized signal when the light beams come to the same position on the surface to be scanned in the horizontal scanning direction.

However, Kanazawa discloses a light receiving surface of the horizontal synchronization detecting sensor (see Ishihara figure 2, 3, 5 and 6 numeral 50) is tilted in the vertical scanning direction (the detector 50 is tilted in the vertical scanning direction by rotating around the horizontal direction; when rotating about the axis of the cylindrical support the detector tilts up and down in the vertical direction; Abstract, Col 7 lines 34-41, Col 2 lines 24-25) so as to output a horizontal synchronized signal when the light beams come to the same position on the surface to be scanned in the horizontal scanning direction (as seen in figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Omura to have a detector be *tilted in the* vertical direction such as Kanazawa for the purpose of providing a compensating means to the light beams deflected by the deflector on a specific target of the detector. Furthermore, there is a possibility that the rotation axis of the polygon mirror is inclined due to manufacturing error, which would cause an error in the start of the scan. Therefore, the start timing of the scan is not

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affected by the manufacturing error in the polygon mirror. In addition, the tilting of the synchronization device is tilted because when a beam is off center the tilt of the detector compensates so a full intensity beam is provided to the detector or other wise a weak intensity beam will provide inaccurate timing for the start scan position.

Response to Arguments

Applicant's arguments with respect to claims 1-5, 14, 18 and 19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pranav V. Khatri whose telephone number is 571-272-8311. The examiner can normally be reached on M-F, 8:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Pranav Khatri
Examiner
03/29/2006



DREW A. DUNN
SUPERVISORY PATENT EXAMINER